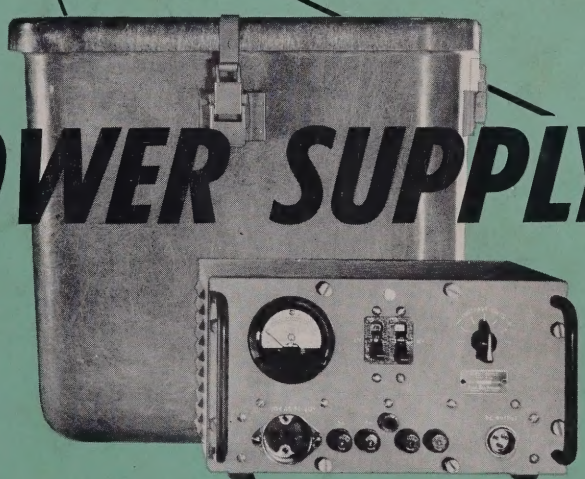
AIRCRAFT RADIO CORPORATION

Boonton, New Jersey

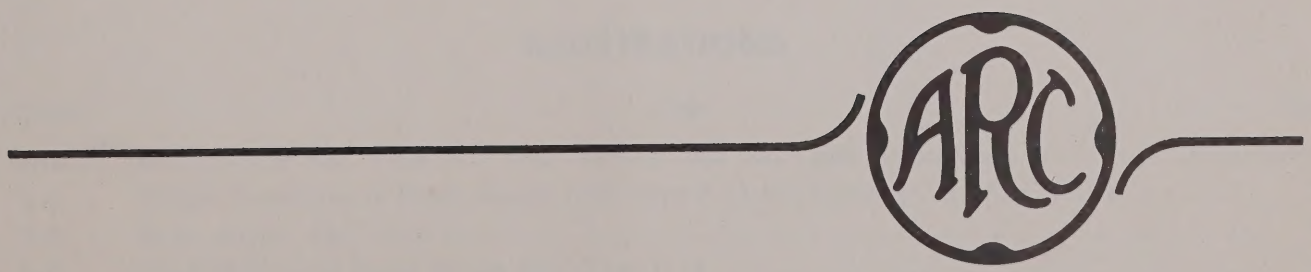
ARC TYPE P-13

POWER SUPPLY



ARC TYPE P-13

Power Supply



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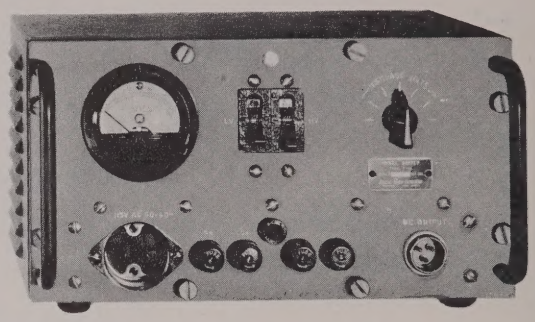
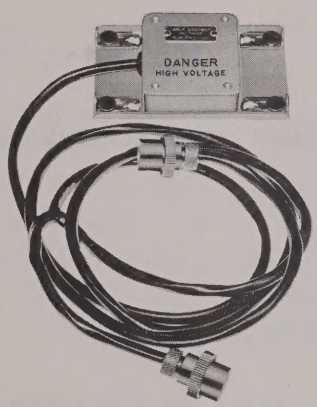
ILLUSTRATIONS

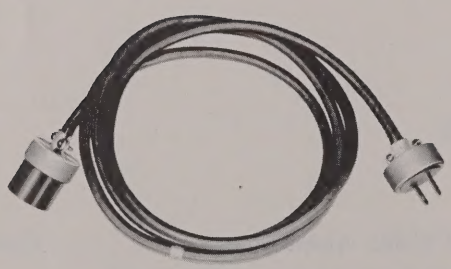
CARRYING CASE
ARC–18208



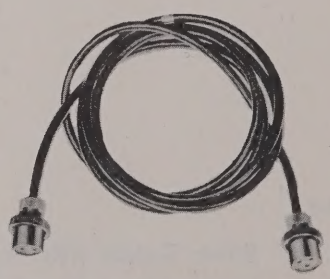
POWER SUPPLY
ARC TYPE P–13



CABLE AND ADAPTER ASSEMBLY
ARC–18283



CABLE ASSEMBLY
ARC–14701



CABLE ASSEMBLY
ARC–11989

TP1024

Figure 1–1. Power Supply ARC Type P-13 with Carrying Case and Cable Assemblies

SECTION I
GENERAL INFORMATION

1–1. PURPOSE.

The ARC Type P-13 Power Supply is a portable, germanium-rectifier d-c power supply designed to operate from a nominal 115-volt, 50- to 60-cycle a-c power source. The P-13 supplies a low-voltage output of 28 volts dc at 5 amperes rated load and a high-voltage output of 275 volts dc at 200 milliamperes rated load. Although intended primarily for use with portable communication systems such as the ARC Type PC-12V and the ARC Type 220, the P-13 may also be used as a convenient bench-test voltage source for other equipment requiring the P-13 rated outputs for operation.

1–2. SPECIFICATIONS.

Input Power:	100-130 volts ac, 50- to 60-cycles, 270 watts
Output Power:	LV—28 volts dc at 5 amperes, continuous duty HV—275 volts dc at 200 milliamperes, continuous duty
Ripple:	LV—Less than 2.0% at rated load HV—Less than 2.0% at rated load
Overload Protection:	115 volts ac—two 5-ampere fuses 28 volts dc—circuit breaker, 6 amperes 275 volts dc—circuit breaker, 230 milliamperes
Weight:	P-13—19.5 pounds Carrying Case — 11.3 pounds, empty; 32.4 pounds, with P-13 and cables
Dimensions:	P-13—11-11/16 in. wide, 6-13/32 in. high, 9-13/32 in. deep Carrying Case — 15-1/4 in. wide, 13-5/16 in. high, 9-15/16 in. deep

1–3. UNITS SUPPLIED.

The units supplied are shown in Figure 1-1 and listed in Table 1-1. Two complements of equipment are available; one is designated as Kit FES-1202, the other as Kit FES-1203. These kits are identical except for the optional requirement of Cable and Adapter Assembly ARC-18283. This assembly is needed for use with Communicator ARC Type PC-12V.

TABLE 1–1. UNITS SUPPLIED

Quantity			
Kit FES-1202*	Kit FES-1203*	Unit	ARC Part No.
1	1	Power Supply ARC Type P-13	17940
1	1	Carrying Case	18208
1	1	Cable Assembly	14701(6 ft)
1	1	Cable Assembly	11989(6 ft)
1	—	Cable and Adapter Assembly	18283
1	1	Instruction Book	—

* Kit FES-1202 is used with the ARC Type PC-12V Portable Communicator. Kit FES-1203 is used with the ARC Type 220 Portable Communicator and all other equipments.

1–4. DESCRIPTION.

Power Supply ARC Type P-13. Power Supply ARC Type P-13 is a single-chassis assembly enclosed in a louvered cabinet. The assembly is secured within the cabinet by eight captive screws on the front panel and two on the rear of the cabinet. All input and output connectors, operating controls, indicating devices, and circuit protectors are mounted on the front panel.

The primary a-c input circuit is protected by a 5-ampere cartridge fuse in each line. Spare fuses are furnished in fuse holders located on the front panel. The low- and high-voltage circuits are protected by solenoid-operated, manual-reset circuit breakers which also function as the power control switches. In addition, the low-voltage circuit breaker is used to control primary power to the P-13. The primary winding of the power transformer is tapped at seven points to compensate for variations in the a-c line voltage. The taps are selected by the INCREASE VOLTS switch. A variation from 100 to 130 volts ac may be equalized by positioning the switch to supply the rated d-c outputs. Primary power is connected to the front panel through the 115V AC 50-60~ receptacle.

Separate rectifier circuits are used for the low- and high-voltage outputs. The low-voltage circuit consists of a single-phase, center-tapped, full-wave, ten-unit-stacked germanium rectifier with a single-section choke-input filter. A power-on indicator lamp and a 0- to 50-volt

range voltmeter, mounted on the front panel, are also connected in this circuit. The high-voltage circuit is a full-wave bridge rectifier using three type 1N315 germanium rectifiers in each leg, with a single-section, swinging choke-input filter. The low- and high-voltage outputs are brought out to the DC OUTPUT receptacle.

Carrying Case ARC-18208. Carrying Case ARC-18208 is a weather-proof, shock-resistant, glass fiber reenforced plastic container, with a detachable cover, used to store and transport the P-13 and its cable assemblies. The cover is secured to the body by four spring-loaded latches. When fastened in position, a gum-rubber gasket in the cover seats against the body of the case to form a splashproof joint. The cover is fitted with a fold-down handle for carrying purposes. The interior of the case is lined with flexible, foamed plastic to protect the unit against possible damage. The cable assemblies are stored in a cavity in the bottom of the case.

Cable Assembly ARC-14701. Cable Assembly ARC-14701 is used to connect the P-13 to the 115-volt ac primary power source. It consists of a 6-foot, two-conductor, plastic-insulated cable terminated at one end with a two-contact female connector and at the other end with a two-contact male connector.

Cable Assembly ARC-11989. Cable Assembly ARC-11989 is used to connect the LV and HV d-c outputs of the P-13 to the ARC Type 220, or similar type equipment. It consists of a 6-foot, four-conductor cable, with one conductor not used, terminated at each end with a three-contact connector (ARC-12371).

Cable and Adapter Assembly ARC-18283. Cable and Adapter Assembly ARC-18283 is used to connect the LV and HV d-c outputs of the P-13 to the ARC Type PC-12V. The use of the P-13 with this adapter eliminates the need for an ARC Type D-10A Dynamotor to supply high voltage to the PC-12V.

ARC-18283 consists of a 6-foot, three-wire cable assembly with two connector terminations and one adapter termination. One connector is an ARC-12371 connector which mates with the DC OUTPUT connector of the P-13. The other connector is an ARC-12370 (or ARC-19310) connector which mates with the primary 28 VOLTS d-c input connector on the front panel of the CM-10 Control Panel-Mounting of the ARC Type PC-12V. The adapter assembly mounts on the ARC Type R-19 Receiver in place of the D-10A Dynamotor and mates with the connector normally used for the D-10A. It is secured in position by means of four snapslides.

SECTION II
INSTALLATION AND OPERATION

2–1. INSTALLATION.

The ARC Type P-13 Power Supply may be installed in any convenient location. Outline dimensions for the unit and its carrying case are shown in Figure 2-1. To install the equipment, proceed as follows:

Step 1. Remove the ARC Type P-13 and the cable assemblies from the carrying case.

Caution

Before releasing each spring-loaded latch on the carrying case, place thumb on top of the latch hook to restrain the spring kickback.

Step 2. Set the LV and HV circuit breaker switches to the OFF position. Connect Cable Assembly ARC-14701 between the 115V AC 50-60~ receptacle and the 115-volt, 60-cycle, a-c power source.

Step 3. Depending upon the type of equipment to be powered, use one of the following methods to connect the DC OUTPUT of the P-13:

a. If the P-13 is used to power the ARC Type PC-12V, use Cable and Adapter Assembly ARC-18283. Remove the D-10A Dynamotor from the R-19 Receiver of the PC-12V. Install the adapter assembly in place of the

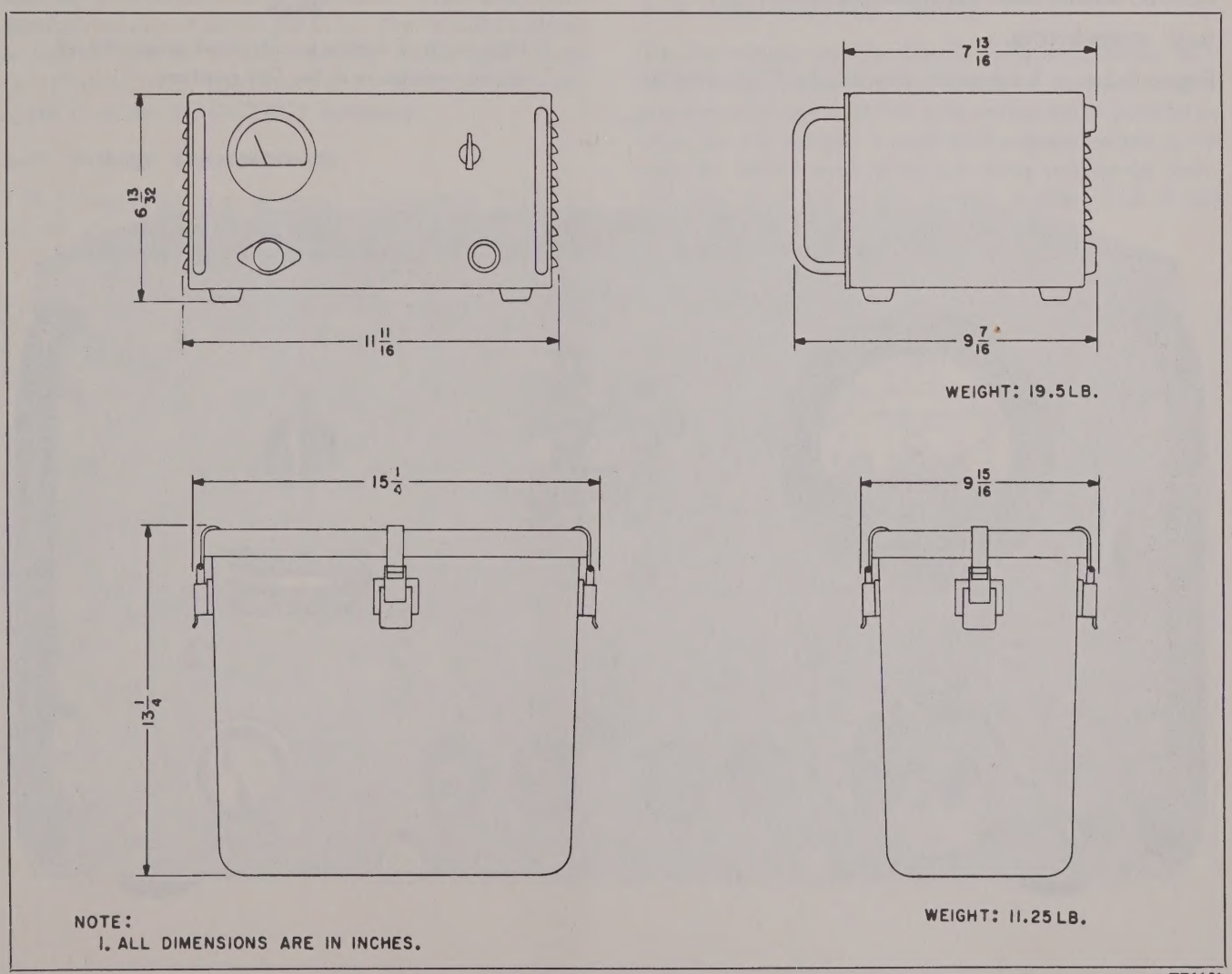


Figure 2–1. Outline Dimensions of Power Supply ARC Type P-13 and Carrying Case ARC-18028

D-10A and secure it in position by closing the four snap-slides. Route the cable from the adapter to the left of the receiver and connect the two-contact connector to the 28 VOLTS receptacle on the CM-10 Control Panel-Mounting. Connect the three-contact connector to the DC OUTPUT receptacle of the P-13.

b. If the P-13 is used to power the ARC Type 220, Cable and Adapter Assembly ARC-18283 is not required since a dynamotor adapter assembly is supplied as part of the Type 220. Remove the D-10A Dynamotor from the R-19 Receiver of the Type 220 and install the adapter assembly. Connect Cable Assembly ARC-11989 between the DC OUTPUT receptacle of the P-13 and the input power receptacle on the CM-11 Control Panel-Mounting.

c. If the P-13 is used to power equipment other than the Type PC-12V or Type 220, fabricate a cable assembly, terminated at one end with an ARC-12371 connector and terminated at the other end as required to connect the P-13 voltage outputs to the equipment. Use wires no smaller than No. 16 for the cable.

2–2. OPERATION.

Figure 2-2 is a front-panel view of the P-13 showing all operating controls. To operate the P-13, proceed as follows:

Step 1. Set the P-13 LV and HV switches to OFF and turn the INCREASE VOLTS control to the maximum counterclockwise position.

Step 2. To apply 115-volt primary power and supply low voltage, set the LV circuit breaker switch to ON (up position). The red indicator lamp should light, and the voltmeter should read the value of the low-voltage output. For maximum indicator lamp brilliance, rotate the lens assembly clockwise.

Step 3. Adjust the INCREASE VOLTS control as required to obtain an indicated voltmeter reading as near as possible to 28 volts. (The red indicator light and voltmeter may flicker during adjustment of the INCREASE VOLTS control.)

Step 4. To supply high voltage, set the HV circuit breaker switch to ON (up position).

Note

High voltage cannot be obtained unless the LV circuit breaker is in the ON position.

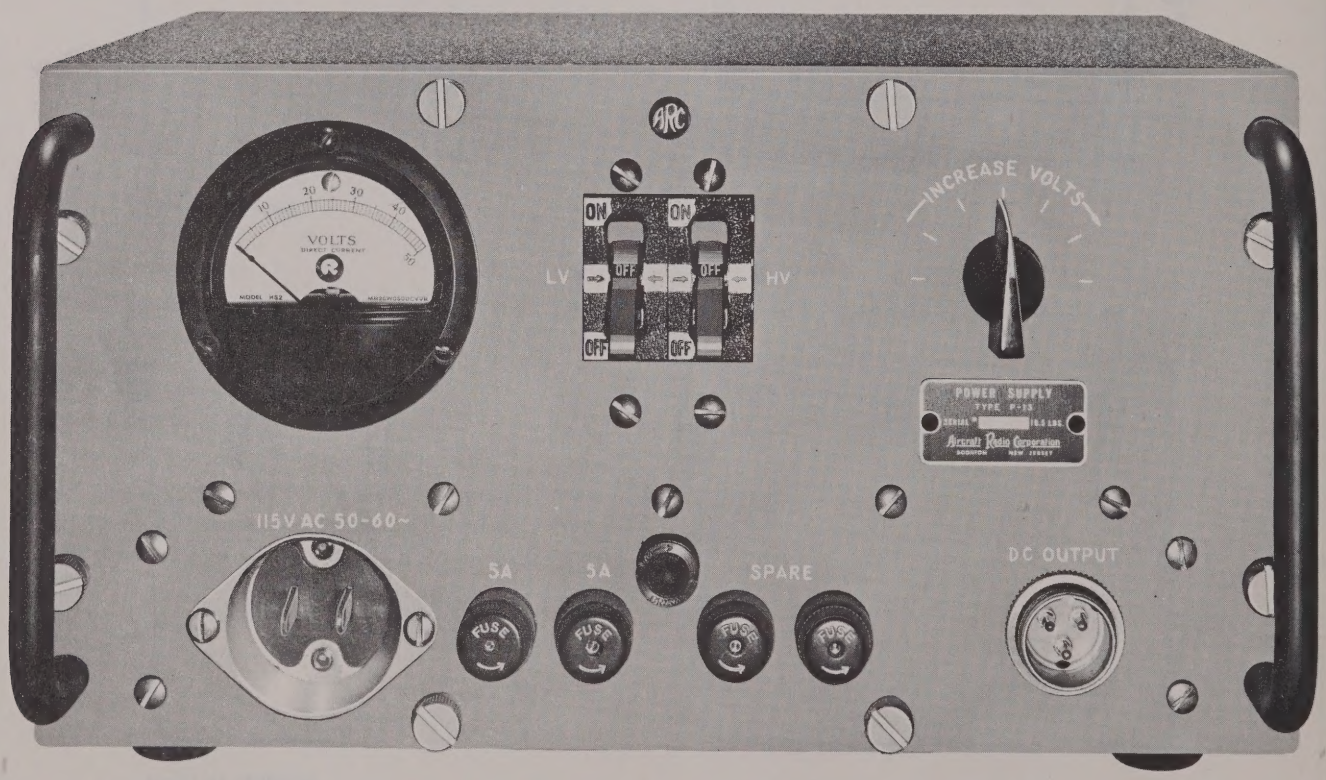


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Figure 2–2. Power Supply ARC Type P-13

SECTION III
THEORY OF OPERATION

3–1. GENERAL.

A block diagram of the ARC Type P-13 Power Supply is shown in Figure 3-1. The schematic diagram is shown in Figure 4-3. The 115-volt, 50- to 60-cycle a-c power is connected to the primary of T101. This transformer has a 68-volt, center-tapped secondary and a 328-volt secondary. The low-voltage winding is connected to CR101, a full-wave, germanium rectifier. The rectified output is filtered through L101 and C101, a single-section, choke-input filter. The filtered 28 volts dc is connected to pin A of the DC OUTPUT connector. The high-voltage winding is connected to a full-wave, bridge-type germanium rectifier (CR102-CR113). The rectified output is filtered through a single-section, choke-input filter (L102 and C102). The filtered 275 volts dc is connected to pin C of the DC OUTPUT connector.

3–2. POWER TRANSFORMER.

The primary winding of power transformer T101 is tapped at seven points to allow for a line-voltage variation of from 100 to 130 volts ac. The taps are selected by the INCREASE VOLTS rotary switch, S101, to obtain rated secondary output voltages regardless of the average line voltage value. The low-voltage secondary is center-tapped for use with a full-wave rectifier circuit. The high-voltage winding is not center-tapped since it is used with a full-wave, bridge-type rectifier. The primary circuit of the power transformer is protected against overload by two 5-ampere cartridge-type fuses, F101 and F102.

3–3. LOW-VOLTAGE SUPPLY.

The low-voltage rectifier, CR101, is a single-phase, full-wave, center-tapped unit consisting of ten stacked germanium rectifiers with five units connected in parallel in each leg. The rectifier is rated at 5 amperes output at 31 volts dc. Both halves of the a-c input voltage are rectified, and each leg of the rectifier handles half of the average load current.

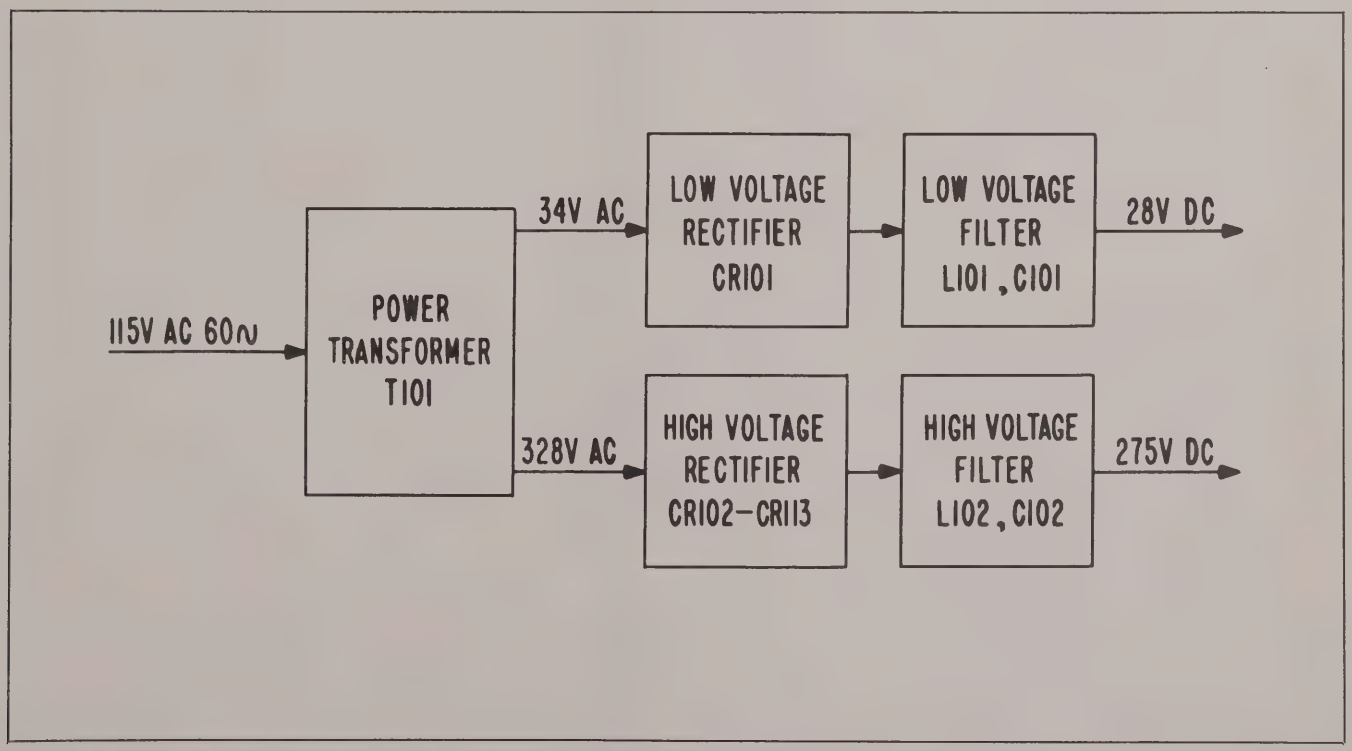

Figure 3–1. Block Diagram of Power Supply ARC Type P-13

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A single-section, choke-input filter, consisting of a 20-mh choke, L101, and a 4000-μf capacitor, C101, is used to smooth the low-voltage rectifier output. The combination of L101 and C101 reduces the a-c ripple factor to less than 2.0 per cent of the 28-volt d-c output at 5 amperes rated load current. A 126-ohm resistor, R101, is connected across the 28-volt d-c output to provide a no-load resistance and to discharge C101 when power is turned off. Two low-voltage indicators are connected across the 28-volt d-c output. One is a 28-volt pilot lamp, DS101, which also functions as the power "on" indicator; the other is a 0- to 50-volt meter, M101.

The low-voltage circuit is protected from overload by a solenoid-operated, manual-reset circuit breaker, CB101, which also serves as the low-voltage ON-OFF switch and the P-13 primary power ON-OFF switch. The solenoid winding of the circuit breaker is connected in series with the low-voltage center-tap lead to ground. The circuit breaker contacts are connected in series with one of the primary input leads. During operation of the P-13, excessive load on the low-voltage supply will operate CB101 and open the input circuit.

3–4. HIGH-VOLTAGE SUPPLY.

The high-voltage rectifier is a full-wave, bridge-type rectifier consisting of an assembly of twelve germanium units. Three type 1N315 germanium units, connected in series, are used in each leg of the bridge to withstand the peak inverse voltage applied. The bridge rectifier is rated at 220 milliamperes at 275 volts dc.

A single-section, choke-input filter consisting of a swinging choke, L102, (16 H, no load to 1.2 H, full load), and 40-μf capacitor, C102, is used to smooth the high-voltage rectifier output. A swinging choke is used to provide good voltage regulation over a wide range of load values. The combination of L102 and C102 reduces the a-c ripple factor to less than 2.0 per cent of the 275-volt d-c output at 200 milliamperes rated load current.

A bleeder resistor assembly, R102, is connected across the high-voltage output. The assembly consists of four 68,000-ohm, 2-watt resistors in parallel, providing an effective resistance of 17,000 ohms, 8 watts. Under the no-load condition, the bleeder resistance establishes a minimum current in the high-voltage supply. This minimum current (approximately 20 milliamperes), combined with the characteristics of the swinging choke, L102, improves the regulation of the high-voltage supply. The bleeder resistance also discharges C102 when power is turned off.

A solenoid-operated, manual-reset circuit breaker, CB102, connected in series with one of the high-voltage secondary leads, protects the high-voltage supply from overload. CB102 is also used as the high-voltage ON-OFF switch. During operation of the P-13, excessive load on the high-voltage supply will operate CB102 and open the rectifier circuit. A 33-ohm resistor, R103, shunts the solenoid winding of CB102 to enable the circuit breaker to remain closed under full load without chattering.

SECTION IV
MAINTENANCE

4–1. INTRODUCTION.

This section contains maintenance data for the ARC Type P-13 Power Supply. Included are a trouble-shooting chart (Table 4-1), voltage and resistance measurements (Tables 4-2 and 4-3), photographic interior views (Figures 4-1 and 4-2) to aid in locating and identifying detail parts, and schematic and wiring diagrams (Figures 4-3 and 4-4). A parts location diagram is furnished on the inside top surface of the P-13 cabinet. Section V provides a table of replaceable parts.

4–2. CABINET REMOVAL.

To remove the P-13 chassis from its cabinet, loosen the two captive screws on the rear panel. Stand the unit on end and loosen the eight captive screws on the front panel. Pull the chassis carefully from the cabinet, tilting the chassis towards the rear as it emerges to avoid striking the power transformer.

4–3. TROUBLE-SHOOTING CHART.

Table 4-1 outlines a trouble-shooting procedure, together with probable causes and suggested remedies or checks.

TABLE 4–1. P-13 TROUBLE-SHOOTING CHART

Symptom	*Probable Cause*	*Remedy or Check*
1. NO LV OUTPUT	No 115-volt ac input.	Check input cable connections.
	Fuses blown or missing.	Check F101, F102.
	Defective primary tap switch.	Check S101.
	Defective LV circuit breaker.	Check CB101.
	Defective LV rectifier.	Check CR101.
	Defective choke.	Check L101.
	Defective power transformer.	Check T101.
2. NO HV OUTPUT	Defective HV circuit breaker.	Check CB102.
	Defective HV rectifier.	Check CR102 through CR113.
	Defective swinging choke.	Check L102.
	Defective power transformer.	Check T101 (HV secondary).
3. LOW OR ERRATIC LV SUPPLY	Low or erratic input.	Check input cable connections and line voltage.
	Intermittent load.	Check output cable connections.
	Defective component.	Check S101, CB101, CR101, L101, C101, and T101.
4. LOW OR ERRATIC HV SUPPLY	Intermittent load.	Check output cable connections.
	Defective component.	Check CB102, CR102 through CR113, L102, C102, R102, and T101 (HV secondary).
5. HIGH LV OUTPUT	No LV load.	Check output cable connections and LV load.
6. HIGH HV OUTPUT WITH NO LOAD	Bleeder resistance open.	Check R102A, R102B, R102C, R102D.

4–4. REPLACEMENT OF DIODES IN HV RECTIFIER.

The germanium diode rectifier units, CR102 through CR113, used in the high-voltage rectifier bridge, are of the 1N315 type. If any of these units are to be replaced, the new diodes should be correctly polarized and their leads routed as nearly like the original installation as possible. The location and polarity of each diode is shown in the wiring diagram, Figure 4-4. When soldering a replacement unit, hold the diode lead with a pair of pliers between the solder joint and the diode. The pliers form a heat sink during soldering and prevent excessive heat from damaging the unit. Solder the diode leads at the rear of the rectifier terminal board only, as shown in Detail A of Figure 4-4.

4–5. VOLTAGE AND RESISTANCE MEASUREMENTS.

Tables 4-2 and 4-3 are typical voltage and resistance measurements made under the conditions noted.

TABLE 4–2. P-13 VOLTAGE MEASUREMENTS

Conditions:

1. All measurements made with a 20,000 ohm/volt voltmeter, such as Simpson Model 260, or equivalent.
2. All a-c and d-c voltages are measured with respect to chassis ground, unless noted otherwise. All d-c voltages are positive.
3. Input voltage set (by means of a General Radio Variac, Type 200C or equivalent) to 115 volts ac for all measurements.
4. Voltage values given are for full load, using either an ARC Type PC-12V or ARC Type 220 Portable Communicator operating in the "whistle-through" condition. For full-load operation, adjust the P-13 INCREASE VOLTS switch as required to obtain a voltmeter reading as near as possible to 28 volts.

Test Point	*Symbol*	*Terminal or Wire Color*	*Voltage Full Load†*
Input Connector	J101	WH and GRAY*	115V AC
Power Transformer	T101	1 and (Tap Req'd)*	115V AC
Power Transformer	T101	9 and 10*	320V AC
Power Transformer	T101	11 and 12*	34V AC
Power Transformer	T101	12 and 13*	34V AC
LV Rectifier-Output	CR101	RED	28.6V DC
OUTPUT VOLTS Receptacle	J102	A	27.5V DC
HV Rectifier-Input	CR106 CR108	OR	320V AC
HV Rectifier-Input	CR107 CR109	WH	320V AC
HV Rectifier-Output	CR112 CR113	YEL	265V DC
OUTPUT VOLTS Receptacle	J102	C	260V DC

* Measure voltage across terminals or wire colors indicated.
† Refer to Condition No. 4.

TABLE 4–3. P-13 RESISTANCE MEASUREMENTS

Conditions:

1. All cables disconnected from P-13 Power Supply.
2. INCREASE VOLTS switch set at maximum counterclockwise position, and LV and HV circuit breakers set to ON position.
3. All resistance values are in ohms. Multiplier: K=1,000.
4. Measurements are made from terminal indicated to chassis ground, unless noted otherwise. *Negative ohmmeter probe must be grounded* to avoid false readings due to rectifier action.

Test Point	*Symbol*	*Terminal or Wire Color*	*Resistance*
Input Connector	J101	WH and GRAY*	2
Power Transformer	T101	1 and 8*	2
Power Transformer	T101	9 and 10*	38
Power Transformer	T101	11 and 12*	0.2 (approx.)
Power Transformer	T101	12 and 13*	0.2 (approx.)
Power Transformer	T101	9	14K
Power Transformer	T101	10	14K
LV Circuit Breaker	CB101	C	†
LV Rectifier-Output	CR101	Red	80
LV Choke	L101	1 and 2*	0.5
OUTPUT VOLTS Receptacle	J102	A	80
HV Circuit Breaker	CB102	B and C*	12
HV Rectifier-Input	CR106 CR108	OR	14K
HV Rectifier-Input	CR107 CR109	WH	14K
HV Rectifier-Output	CR112 CR113	YEL	14K
HV Choke	L102	1 and 2*	45
OUTPUT VOLTS Receptacle	J102	C	14K

* Measure resistance across terminals or wire colors indicated.
† Resistance value is negligible: very nearly 0 ohms.

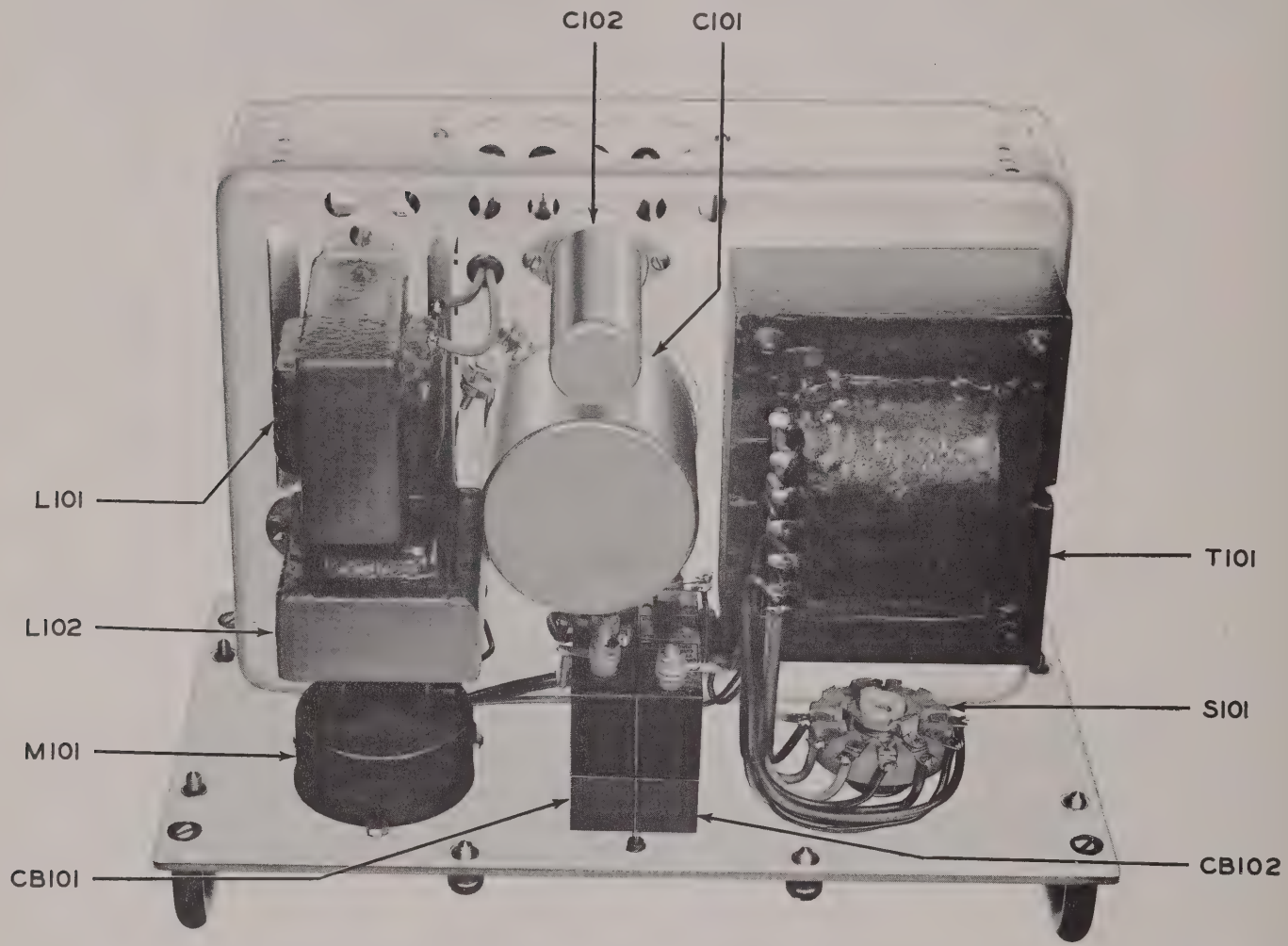

Figure 4–1. Top Interior View of Power Supply ARC Type P-13

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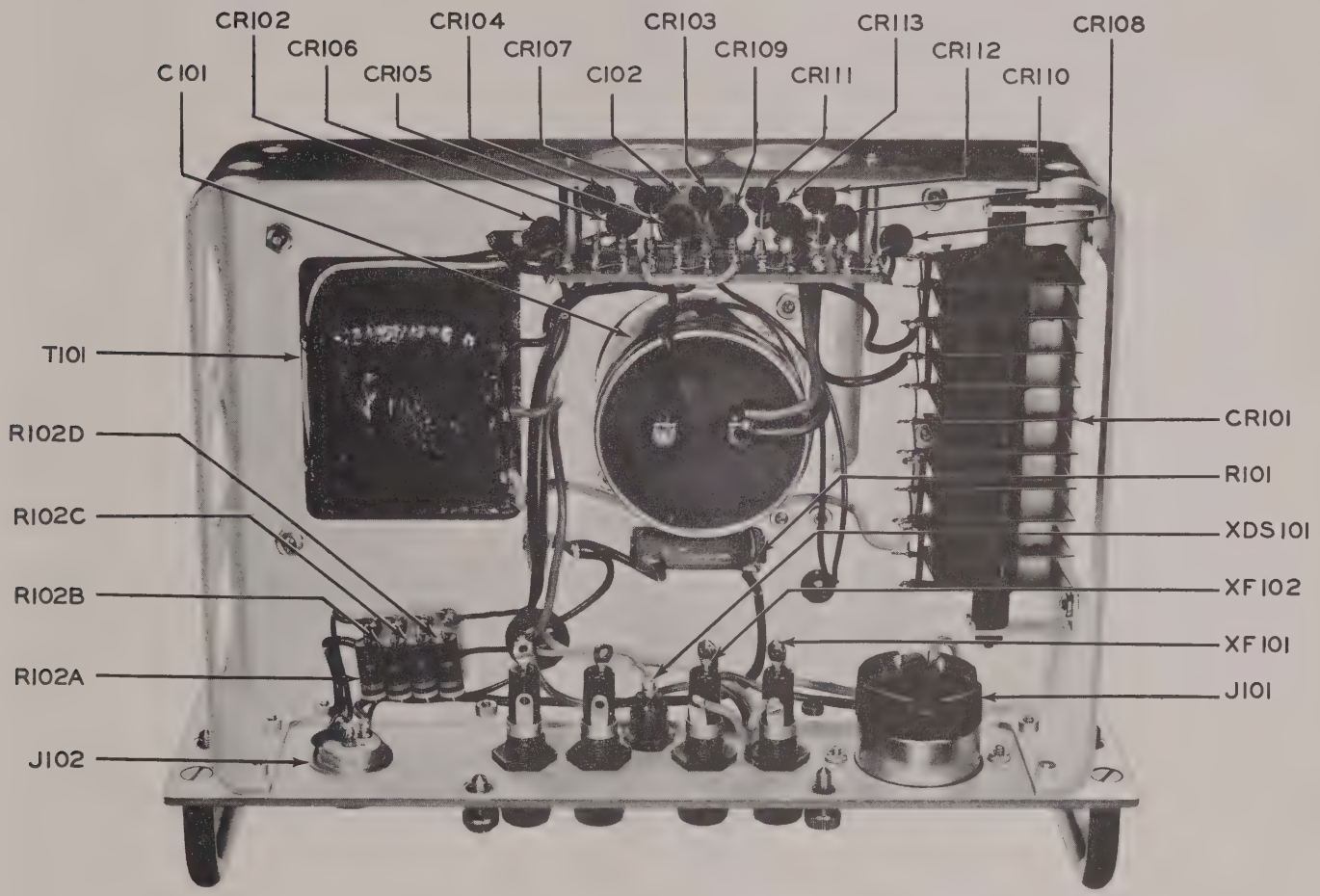

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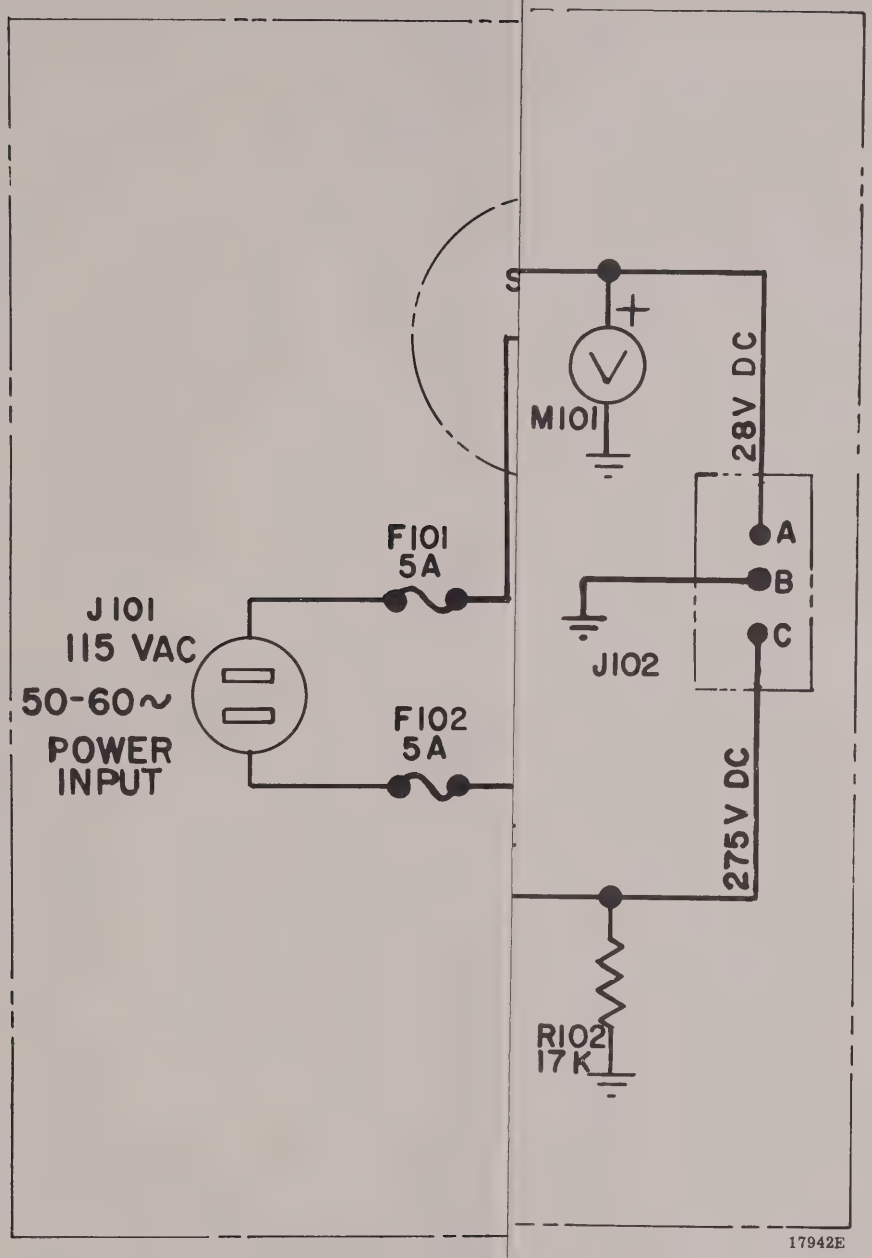
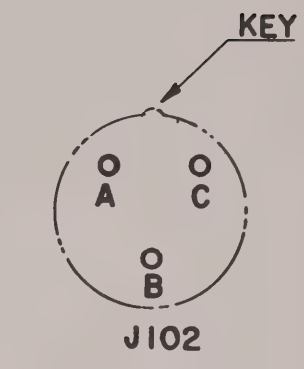
Figure 4–2. Bottom Interior View of Power Supply ARC Type P-13



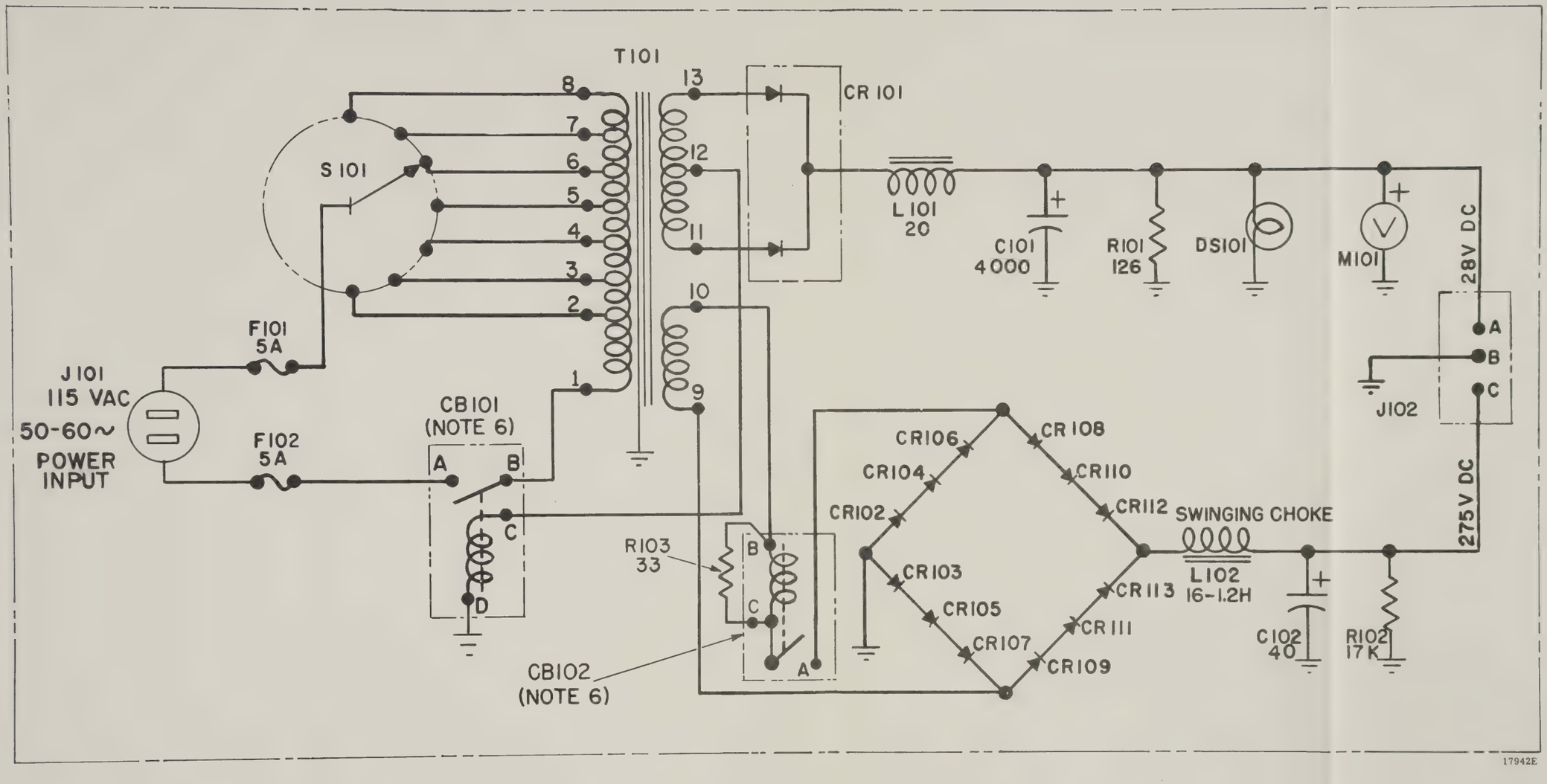


OUTSIDE VIEW

NOTES:

1. FOR WIRING DIAGRAM SEE
2. RESISTANCE VALUES ARE I
3. CAPACITOR VALUES ARE I
   OTHERWISE NOTED.
4. INDUCTOR VALUES ARE IN
   OTHERWISE NOTED.
5. ROTARY SWITCH IS SHOWN
6. CIRCUIT BREAKERS ARE M

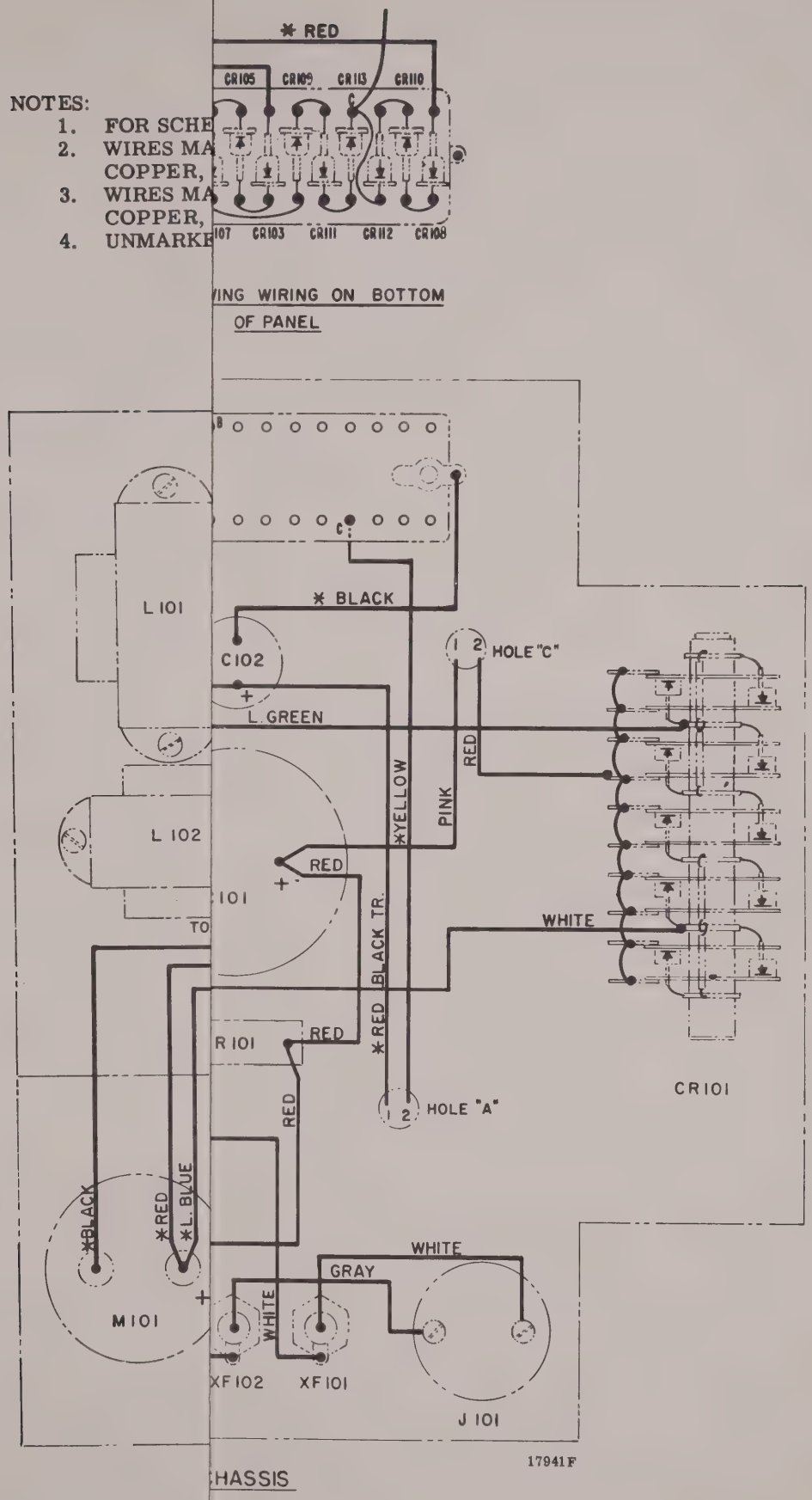
e 4–3. Schematic Diagram of Power Supply ARC Type P-13



NOTES:

1. FOR WIRING DIAGRAM SEE FIGURE 4-4.
2. RESISTANCE VALUES ARE IN OHMS. MULTIPLIER: K=1,000.
3. CAPACITOR VALUES ARE IN MICROFARADS (μF)~ UNLESS OTHERWISE NOTED.
4. INDUCTOR VALUES ARE IN MILLIHENRIES (MH), UNLESS OTHERWISE NOTED.
5. ROTARY SWITCH IS SHOWN AS VIEWED FROM KNOB END.
6. CIRCUIT BREAKERS ARE MAGNETICALLY OPERATED.

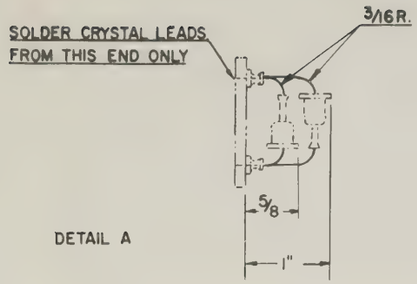
Figure 4–3. Schematic Diagram of Power Supply ARC Type P-13



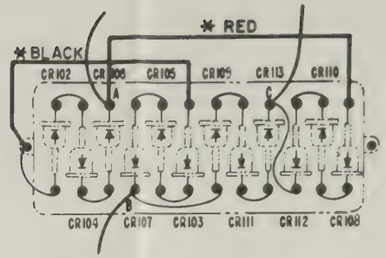
gure 4–4. *Wiring Diagram of Power Supply ARC Type P-13*

NOTES:

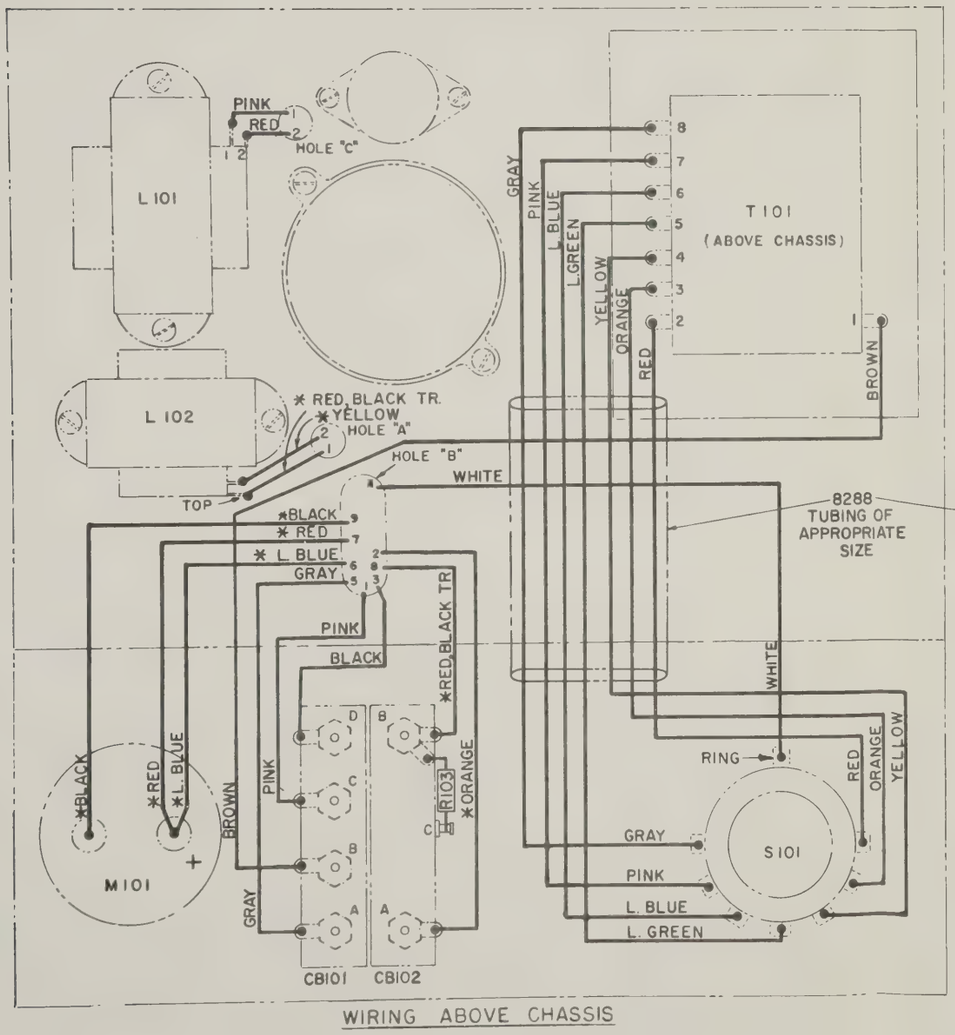
1. FOR SCHEMATIC DIAGRAM SEE FIGURE 4-3.
2. WIRES MARKED WITH COLOR NOTE ARE #18 STRANDED COPPER, VINYLITE INSULATED.
3. WIRES MARKED WITH ASTERISK (*) ARE #22 STRANDED COPPER, VINYLITE INSULATED.
4. UNMARKED WIRES ARE #22 BARE, TINNED COPPER.



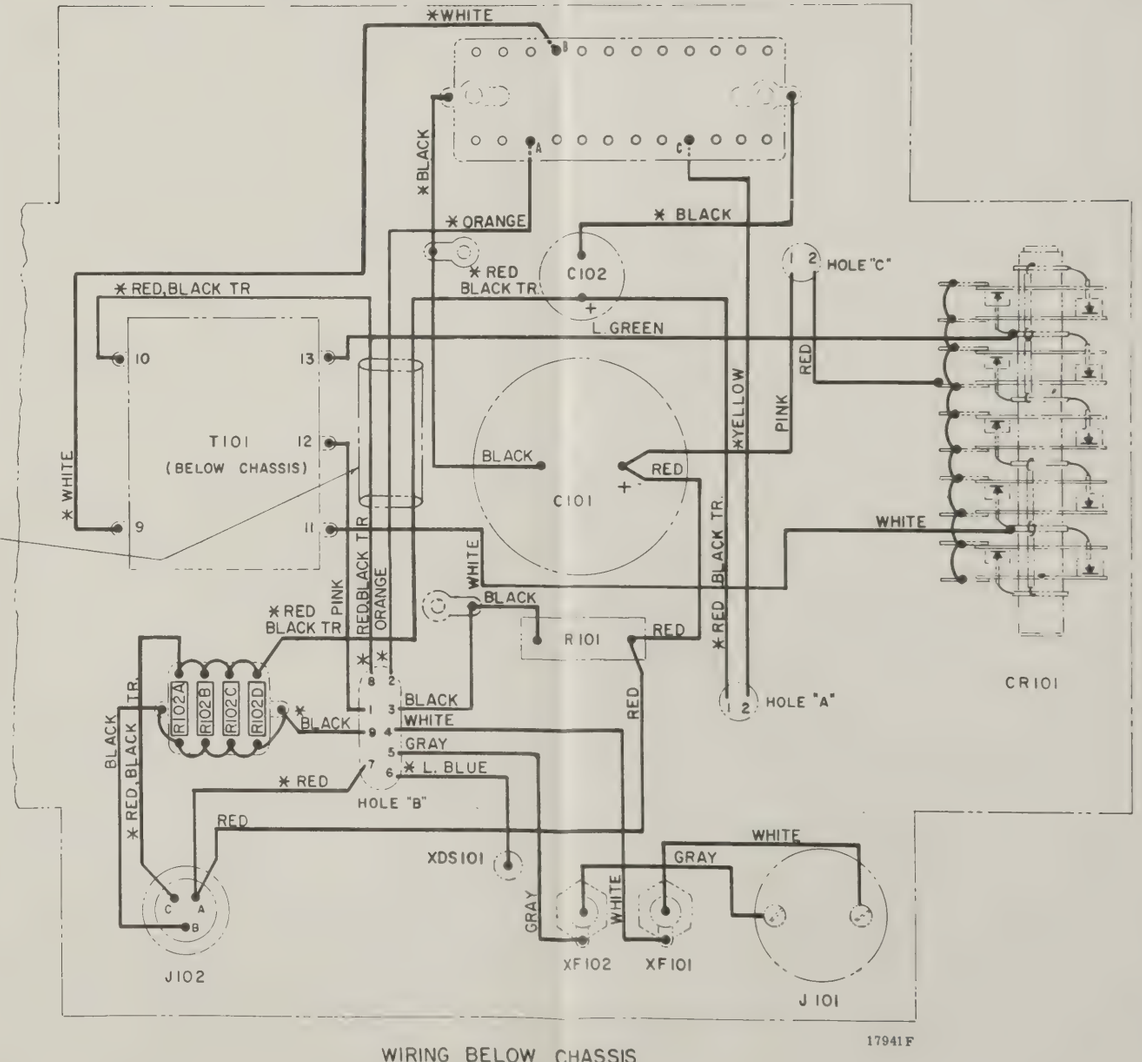
DETAIL A



VIEW SHOWING WIRING ON BOTTOM OF PANEL



WIRING ABOVE CHASSIS



WIRING BELOW CHASSIS

17941F

Figure 4–4. Wiring Diagram of Power Supply ARC Type P-13

SECTION V
TABLE OF REPLACEABLE PARTS

TABLE 5–1. LIST OF MANUFACTURERS

Code Designation	Name of Manufacturer	Address
AB	Allen-Bradley Co.	136 W. Greenfield Ave. Milwaukee 4, Wis.
ARC	Aircraft Radio Corp.	Aircraft Radio Corp. Boonton, N. J.
BUS	Bussman Manufacturing Co.	University at Jefferson St. Louis 7, Mo.
CLD	Cornell Dubilier Electric Corp.	333 Hamilton Blvd. South Plainfield, N. J.
COLIN	Colin Campbell Co.	Westville Avenue Extension Danbury, Conn.
DLC	Dial Light Corp. of America, Inc.	60 Stewart Avenue Brooklyn 37, N. Y.
GE	General Electric Co.	Syracuse 1, N. Y.
HAW	Harvey Hubbell, Inc.	Box H, Barnum Station Bridgeport 2, Conn.
HCB	Heineman Electric Co.	26 Journal Square Jersey City, N. J.
MAI	Marion Electrical Instrument Co.	Grenier Field Manchester, N. H.
OM	Ohmite Manufacturing Co.	3601 Howard Street Skokie, Ill.

TABLE 5–2. TABLE OF REPLACEABLE PARTS

Reference Designation	Description	ARC Part No.	Manufacturer* and Manufacturer's No.
C101	CAPACITOR, Fixed, electrolytic, 4000 μf, 50 vdcw	18013	CLD FB-4050
C102	CAPACITOR, Fixed, electrolytic, 40 μf, 450 vdcw	13154	ARC 13154
CB101	RELAY-SWITCH, Manual reset, 6 amp, 30 vdc	18227	HCB AM-12RSK-MG3
CB102	CIRCUIT BREAKER, Magnetic, manual reset, 230 ma, 335 vac	18226	ARC 18226

* See Table 5-1 for identification of manufacturer's code.

TABLE 5–2. TABLE OF REPLACEABLE PARTS—Continued

Reference Designation	Description	ARC Part No.	Manufacturer* and Manufacturer's No.
CR101	RECTIFIER, Metallic, stacked germanium, single phase, center-tapped, 5 amp at 62.5 vdc	18216	GE 4JA211BC1AA5
CR102	SEMICONDUCTOR DEVICE, Diode, germanium, diffused junction	17786	GE 1N315
CR103	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR104	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR105	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR106	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR107	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR108	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR109	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR110	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR111	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR112	SEMICONDUCTOR DEVICE, Diode, same as CR102		
CR113	SEMICONDUCTOR DEVICE, Diode, same as CR102		
DS101	LAMP, Incandescent, pilot, 28 volts, 0.04 amp, T-1¾ bulb, midget flange base	8622	GE 327
F101	FUSE, Cartridge, glass, 5 amp, 250 volts, 1½ in. lg, ¼ in. dia	8773	BUS AGC5
F102	FUSE, Cartridge, same as F101		
J101	CONNECTOR, Receptacle, electrical, two contact, male	14714	HAW AR11834
J102	CONNECTOR, Receptacle, electrical, three contact, male, steatite insulation, keyway center	12426	ARC 12426
L101	REACTOR, 20 MH, 5 amp	18190	COLIN L-1806A
L102	REACTOR, Swinging, 16 to 1.2 H, 220 ma	19525	COLIN L-2085
M101	VOLTMETER, 50 vdc, 1000 ohms/volt	18228	MAI HS-2½, MR26W050DCVVR
R101	RESISTOR, Fixed, wire wound, 126 ohms ±5%, 10 watt	7010	ARC 7010
R102A	RESISTOR, Fixed, comp, 68,000 ohms ±5%, 2 watt	203(68K)	AB H-B 68,000 ±5%

* See Table 5-1 for identification of manufacturer's code.

TABLE 5–2. TABLE OF REPLACEABLE PARTS—Continued

Reference Designation	Description	ARC Part No.	Manufacturer* and Manufacturer's No.
R102B	RESISTOR, Fixed, same as R102A		
R102C	RESISTOR, Fixed, same as R102A		
R102D	RESISTOR, Fixed, same as R102A		
S101	SWITCH, Rotary, single section, 7 position, non-shorting contacts	18229	OM 111-7
T101	TRANSFORMER, Power, step-down and step-up, primary—100 to 135 vac, 7 taps; secondaries—328 vac, 200 ma, and 68 vac, center-tapped, 5 amp	18191	COLIN L-1808A
XDS101	LIGHT, Panel, dark red	16417	DLC 2-1930-121
XF101	FUSEHOLDER	8170	BUS HKP-HR
XF102	FUSEHOLDER, same as XF101		
	KNOB, Lever	16178	ARC 16178
	TERMINAL BOARD, Resistor	12856	ARC 12856
	TERMINAL BOARD, Rectifier	17946	ARC 17946

* See Table 5-1 for identification of manufacturer's code.